

**REMARKS**

Applicant has carefully reviewed the Application in light of the Office Action dated April 2, 2010 ("Office Action"). At the time of the Office Action, Claims 1-21 were pending and rejected in the Application. The Office Action rejects Claims 1-21. Applicant amends Claims 1, 3, 5, 7, 9-12, 15, and 17-21. Applicants added new Claims 22-30. Applicant respectfully requests reconsideration of the pending claims and favorable action in this case.

**I. Claim Rejections under 35 U.S.C. § 102**

The Examiner rejects Claims 1, 4-8, 10-19, and 21 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,684,945 issued to Chen et al. ("*Chen*"). Applicant respectfully traverses these rejections. For purposes of advancing prosecution, however, Applicant amends Claims 1, 3, 5, 7, 9-12, 15, and 17-21.

**A. Claims 1, 12, 14, 15, 17, 18, and 19**

For example, as amended, Claim 1 recites:

A method of identifying problems in applications, comprising:  
monitoring at a kernel level system resource usage of one or more running applications without modifying run-time environments of the one or more applications;  
from the system resource usage, determining a memory usage pattern for each of a plurality of applications, each memory usage pattern indicating for a selected one of the plurality of applications:  
a first memory usage amount during a first time period;  
a second memory usage amount during a second time period; and  
a change in the memory usage of the selected one of the plurality of applications from the first time period to a second time period, the change in the memory usage equaling the difference between the first memory usage amount and the second memory usage amount;  
determining whether a change in the memory usage of a first application within the plurality of applications satisfies a predetermined criteria associated with one or more problems; and  
if the change in the memory usage of the first application satisfies the predetermined criteria, identifying the first application to a user.

*Chen* fails to recite, expressly or inherently, every element of amended Claim 1 for at least several reasons. First, *Chen* fails to recite "determining a memory usage pattern for each of a plurality of applications." Second, *Chen* fails to recite "each memory usage pattern

indicating for a selected one of the plurality of applications: a first memory usage amount during a first time period; a second memory usage amount during a second time period; and a change in the memory usage of the selected one of the plurality of applications from the first time period to a second time period, the change in the memory usage equaling the difference between the first memory usage amount and the second memory usage amount.” As a result, as described further below, Claim 1 is allowable.

1. **Chen fails to disclose “determining a memory usage pattern for each of a plurality of applications.”**

*Chen* fails to recite “determining a memory usage pattern for each of a plurality of applications.” Rather, *Chen* merely discloses monitoring “for optimal system performance under a wide variety of loads.” (*Chen*, Column 87, lines 23-25). Likewise, *Chen* discloses “improv[ing] system performance.” (*Chen*, Column 87, lines 25-28). Accordingly, *Chen* discloses creating a library of “performance readings, analysis, and treatment data.” (*Chen*, Column 85, lines 47-62). Thus, *Chen* is focused on over-all system performance rather than memory usage by individual applications. Furthermore, though *Chen* briefly discloses that “a data filter may set an alarm when paging space on the host machine is less than 10 percent free or there is less than 100 pages of free paging space” (*Chen*, Column 87, lines 6-32), the monitoring of memory space that is *available* on a host machine is not analogous to monitoring memory usage by each of a *plurality of applications*. Accordingly, *Chen* fails to disclose, teach, or suggest “determining a memory usage pattern for each of a plurality of applications,” as recited in Claim 1.

2. **Chen fails to disclose “each memory usage pattern indicating for a selected one of the plurality of applications: a first memory usage amount during a first time period; a second memory usage amount during a second time period; and a change in the memory usage of the selected one of the plurality of applications from the first time period to a second time period, the change in the memory usage equaling the difference between the first memory usage amount and the second memory usage amount”**

For similar reasons, *Chen* also fails to recite “each memory usage pattern indicating for a selected one of the plurality of applications: a first memory usage amount during a first time period; a second memory usage amount during a second time period; and a change in the memory usage of the selected one of the plurality of applications from the first time period to a second time period, the change in the memory usage equaling the difference between the first memory usage amount and the second memory usage amount.” As discussed above, *Chen* merely discloses that “a data filter may set an alarm when paging space on the host machine is less than 10 percent free or there is less than 100 pages of free paging space.” (*Chen*, Column 87, lines 6-32). However, the monitoring of memory space that is *available* on a host machine is not analogous to monitoring memory usage by each of a *plurality of applications*. There is no disclosure in *Chen* of “a first memory usage amount during a first time period” and “a second memory usage amount during a second time period,” as recited in Claim 1. Certainly, there is no disclosure of “a change in the memory usage of the selected one of the plurality of applications from the first time period to a second time period, the change in the memory usage equaling the difference between the first memory usage amount and the second memory usage amount,” as recited in Claim 1.

As a result, *Chen* fails to recite, expressly or inherently, every element of amended Claim 1. Claim 1 is thus allowable for at least these reasons. Although of differing scope from Claim 1, Claims 12, 14, 15, 17, 18, and 19 are allowable at least for analogous reasons to those discussed with respect to Claim 1. Applicant respectfully requests reconsideration and allowance of Claims 1, 12, 14, 15, 17, 18, and 19 and their respective dependent claims.

**B. Claims 4-6, 8, 10-11, and 16**

Dependent Claims 4-6, 8, 10-11 depend on Claim 1. Dependent Claim 16 depend upon independent Claim 15. Dependent Claims 4-6, 8, 10-11, and 16 are not anticipated by *Chen*, because they include the limitations of their respective independent claims and add additional elements that further distinguish the art. For example, dependent Claim 5 recites “monitoring at a kernel level system resource usage of one or more running processes belonging to one or more user applications . . . the system resource usage comprising kernel space memory used by each of the plurality of user applications.” In addressing the previous version of Claim 5, the *Office Action* asserts that *Chen* discloses the recited claim elements at

col. 6, lines 61-63; col. 94, lines 10-12; and col. 90, lines 63-65. (*Office Action*, page 4). However, the cited portions merely disclose a recording system for creating a recording file. (*Chen*, Column 6, lines 61-63). According to *Chen*, the user can sort the snapshot of each node by “a specific category or process parameter, e.g., process ID (PID), process name, process priority, userid of the process owner, process memory utilization, CPU utilization, page faults, etc.” (*Chen*, Column 94, lines 19-12). Though *Chen* indicates that a xmservd daemon divides usage of the cpu resource into four groups: kernel, user, wait, and idle” (*Chen*, column 90, lines 63-65), *Chen* does not disclose a relationship between the user process and the kernel memory. Accordingly, *Chen* does not disclose, teach, or suggest “monitoring at a kernel level system resource usage of one or more running processes belonging to one or more user applications . . . the system resource usage comprising kernel space memory used by each of the plurality of user applications,” as recited in Claim 5.

Accordingly, Applicants respectfully submit that Claims 4-6, 8, 10-11, and 16 are allowable over *Chen*. Applicant respectfully requests reconsideration and allowance of Claims 4-6, 8, 10-11, and 16.

**C. Claims 7 and 13**

Claim 7 has been rewritten in independent form to include the limitations recited in Claim 1 (and intervening Claim 6) prior to any amendment in this Response to Office Action. *Chen* fails to recite, expressly or inherently, every element of amended Claim 7 for at least several reasons. First, *Chen* fails to recite “determining a system resource usage pattern of a first application, . . . the system resource usage comprises an amount of memory usage for each of the one or more applications.” Second, *Chen* fails to recite “the predetermined criteria is a limit on a number of memory increases allowed during the plurality of time periods.” As a result, as described further below, Claim 7 is allowable.

1. ***Chen* fails to disclose “determining a system resource usage pattern of a first application, . . . the system resource usage comprises an amount of memory usage for each of the one or more applications”**

For example, *Chen* does not disclose, teach, or suggest “determining a system resource usage pattern of a first application, . . . the system resource usage comprises an amount of memory usage for each of the one or more applications,” as recited in Claim 7. As discussed above, *Chen* merely discloses monitoring “for optimal system performance under a wide variety of loads.” (*Chen*, Column 87, lines 23-25). Likewise, *Chen* discloses “improv[ing] system performance.” (*Chen*, Column 87, lines 25-28). Accordingly, *Chen* discloses creating a library of “performance readings, analysis, and treatment data.” (*Chen*, Column 85, lines 47-62). Thus, *Chen* is focused on over-all system performance rather than memory usage by individual applications. Furthermore, though *Chen* briefly discloses that “a data filter may set an alarm when paging space on the host machine is less than 10 percent free or there is less than 100 pages of free paging space” (*Chen*, Column 87, lines 6-32), the monitoring of memory space that is *available* on a host machine is not analogous to monitoring memory usage by *each* of the one or more *applications*. Accordingly, *Chen* fails to disclose, teach, or suggest “determining a system resource usage pattern of a first application, . . . the system resource usage comprises an amount of memory usage for each of the one or more applications,” as recited in Claim 7.

2. ***Chen* fails to disclose “the predetermined criteria is a limit on a number of memory increases allowed during the plurality of time periods”**

For similar reasons, *Chen* also fails to recite “the predetermined criteria is a limit on a number of memory increases allowed during the plurality of time periods.” The cited portion of *Chen* merely disclose:

The two keywords DURATION and FREQUENCY are used to determine how long time a condition must remain true before the alarm is triggered and to specify the minimum number of minutes between each triggering of the same alarm . . .

For an alarm to be triggered, at least FREQUENCY minutes must have elapsed since the last time this same alarm was triggered. When this is the case, the condition is monitored constantly. Each time the condition switches from false to true, a time stamp is taken. As long as the condition stays true, the elapsed time since the last time stamp is

compared to DURATION and, if it equals or exceeds DURATION, the alarm is triggered.

When it can be done without forcing the data feed interval to become less than one second, filtd makes sure at least three data feeds will be taken in DURATION seconds. This is done by modifying the data feed interval if necessary . . .

(*Chen*, Column 92, lines 8-39). Thus, *Chen* merely discloses that a condition does not immediately trigger the alarm. It must be true for a specified DURATION before the alarm is triggered. There is no disclosure in *Chen* of a limit on a number of memory increases allowed during a plurality of time periods. In fact, and with regard to memory, *Chen* merely discloses that “a data filter may set an alarm when paging space on the host machine is less than 10 percent free or there is less than 100 pages of free paging space.” (*Chen*, Column 87, lines 6-32; Column 92, lines 56-67). However, the monitoring of memory space that is *available* on a host machine is not analogous to monitoring memory increases over a plurality of time periods.. Accordingly, Applicant respectfully submits that there is no disclosure in *Chen* of “the predetermined criteria is a limit on a number of memory increases allowed during the plurality of time periods,” as recited in Claim 7.

As a result, *Chen* fails to recite, expressly or inherently, every element of now independent Claim 7. Claim 7 is thus allowable for at least these reasons. Although of differing scope from Claim 13, Claims 13 is allowable at least for analogous reasons to those discussed with respect to Claim 7. Applicant respectfully requests reconsideration and allowance of Claims 7 and 13.

## **II. Claim Rejections under 35 U.S.C. § 103**

The Examiner rejects Claims 2, 3, 9, and 20 under 35 U.S.C. § 103(a) as being unpatentable over *Chen* in view of U.S. Patent No. 5,835,765 issued to Matsumoto (“*Matsumoto*”). Applicant respectfully requests reconsideration for the following reasons.

Dependent Claims 2, 3, and 9 depend on Claim 1. Dependent Claim 20 depends upon independent Claim 19. Dependent Claims 2, 3, 9, and 20 are not obvious over the proposed *Chen-Matsumoto* combination, because they include the limitations of their respective independent claims and add additional elements that further distinguish the art.

For example, amended Claim 3 recites “determining whether the first application has orphaned one of the one or more running processes, wherein an orphaned process is one wherein a child process is running even though a corresponding parent process associated with the child process is not running.” In addressing the previous version of Claim 3, the *Office Action* asserts that *Matsumoto* discloses the recited claim elements at col. 16, lines 20-49; col. 12, lines 63-67; and col. 13, lines 20-26. (*Office Action*, page 14). However, *Matsumoto* merely discloses “check[ing] the cumulative CPU time used by each program for all executing programs managed by the process manager 12 (S111), and then compar[ing] the actual CPU time total with control limits (predefined value) read from the program definition file (S112).” (*Matsumoto*, Column 16, lines 20-49). With regard to “child processes”, *Matsumoto* merely discloses “[a]ll application programs are executed as ‘children’ of the process manager 12” so that the manager “is able to centrally manage the execution status of each application program.” (*Matsumoto*, Column 12, lines 63-67). There is no disclosure in *Matsumoto* of an “orphaned process . . . wherein a child process is running even though a corresponding parent process associated with the child process is not running,” as recited in Claim 3. Accordingly, Applicants respectfully submit that Claim 3 is allowable over the proposed *Chen-Matsumoto* combination. Although of differing scope from Claim 3, Claim 20 is allowable at least for analogous reasons to those discussed with respect to Claim 3.

As another example, Claim 9 recites “the system resource usage comprises a number of processes that each of the plurality of applications have spawned” and “the predetermined criteria is a generally continuous increase in the number of child processes spawned during the plurality of time periods.” In addressing Claim 9, the *Office Action* asserts that *Matsumoto* discloses the recited claim elements at col. 14, lines 1-11. (*Office Action*, page 14). However, *Matsumoto* merely discloses that “[i]f the number of currently executing programs is less than the number of executable programs read from the program definition file, the program is started as a child program of the process manager by informing the operating system of the priority sequence of the program and instructing the operating system to start the program.” (*Matsumoto*, Column 14, lines 1-11). Thus, a program is started as a child of the manager where the limit of executable programs has not been reached. *Matsumoto* further discloses that “[a]ll application programs are executed as ‘children’ of the

process manager 12” so that the manager “is able to centrally manage the execution status of each application program.” (*Matsumoto*, Column 12, lines 63-67). Thus, all processes are child processes of a single parent process that is the manager. There is no disclosure in *Matsumoto* of a plurality of applications spawning child processes, as required by Claim 9. Furthermore, there is no disclosure in *Matsumoto* of monitoring the number of child processes to identify “a generally continuous increase in the number of child processes spawned during the plurality of time periods,” as recited in Claim 9.

Accordingly, Applicants respectfully submit that Claims 9 is allowable over the proposed *Chen-Matsumoto* combination. Applicant respectfully requests reconsideration and allowance of Claim 9.

#### **New Claims 22-30**

New Claims 22-30 have been added and are fully supported by the original specification. No new matter has been added. New Claims 22-23, 25-26, 27-28, and 29-30 depend upon independent Claims 1, 12, 14, and 19, respectively. Claim 24 depends upon independent Claim 7. Claims 22-30 are patentable over *Chen*, whether considered alone or in combination with any other cited reference, because Claims 22-30 include the limitations of their respective independent claim and add additional elements that further distinguish the art.

For example, Claim 22 recites that “each memory usage pattern for each of the plurality of applications comprises: the amount of memory in a first region being used by a process to store text; the amount of memory in a second region being used by the process to store data; and the amount of memory in a third region being used by the process to store stack memory.” Claims 25, 27, and 29 recite certain substantially similar limitations. This combination of features is not disclosed, taught, or suggested in the prior art of record. To the contrary, and as discussed above, *Chen* only briefly discloses that “a data filter may set an alarm when paging space on the host machine is less than 10 percent free or there is less than 100 pages of free paging space.” (*Chen*, Column 87, lines 6-32). There is no disclosure in *Chen* of memory in various regions for storing data, text, and stack memory, respectively. Accordingly, *Chen* fails to disclose, teach, or suggest “each memory usage pattern for each of the plurality of applications comprises: the amount of memory in a first region being used by a process to store text; the amount of memory in a second region being used by the process to



store data; and the amount of memory in a third region being used by the process to store stack memory,” as recited in Claims 22, 25, 27, and 29. Since *Matsumoto* does not cure these deficiencies, Claims 22, 25, 27, and 29 are allowable over the proposed *Chen-Matsumoto* combination.

As another example, Claim 23 recites that "monitoring memory usage by each of the plurality of applications over a plurality of consecutive discrete time periods;" "determining whether a change in the memory usage of the first application comprises determining that an amount of memory usage for the first application has increased during a plurality of consecutive discrete time periods;" and "diagnosing a memory leak associated with the first application in response to determining that the amount of memory usage for the first application has increased during the plurality of consecutive discrete time periods." Claims 24, 26, 28, and 30 recite certain substantially similar limitations. This combination of features is not disclosed, taught, or suggested in the prior art of record. To the contrary, and as discussed above, *Chen* only briefly discloses that "a data filter may set an alarm when paging space on the host machine is less than 10 percent free or there is less than 100 pages of free paging space." (*Chen*, Column 87, lines 6-32). Thus, *Chen* merely discloses the monitoring of memory space that is *available* on a host machine. There is no disclosure of determining that an amount of memory usage has increased over a plurality of time periods. Further, there is no disclosure of diagnosing a memory leak. Accordingly, *Chen* fails to disclose, teach, or suggest "monitoring memory usage by each of the plurality of applications over a plurality of consecutive discrete time periods;" "determining whether a change in the memory usage of the first application comprises determining that an amount of memory usage for the first application has increased during a plurality of consecutive discrete time periods;" and "diagnosing a memory leak associated with the first application in response to determining that the amount of memory usage for the first application has increased during the plurality of consecutive discrete time periods," as recited in Claims 23, 24, 26, 28, and 30. Since *Matsumoto* does not cure these deficiencies, Claims 23, 24, 26, 28, and 30 are allowable over the proposed *Chen-Matsumoto* combination.

For at least these reasons, Applicant respectfully requests consideration and allowance of Claims 22-30.

**CONCLUSION**

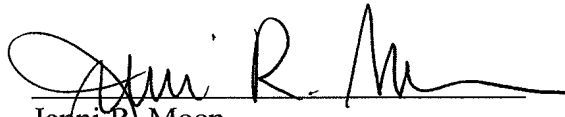
Applicant has made an earnest attempt to place this case in condition for immediate allowance. For the foregoing reasons and for all other reasons clear and apparent, Applicant respectfully requests reconsideration and allowance of the pending claims.

If there are matters that can be discussed by telephone to advance prosecution of this application, Applicant invites the Examiner to contact its attorney, Jenni R. Moen, at 214-415-4820.

The Commissioner is hereby authorized to charge \$688.00 to Deposit Account No. 02-0384 of Baker Botts L.L.P. for additional claims. No other fees are believed to be due, however, the Commissioner is hereby authorized to charge any fees or credits to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,

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